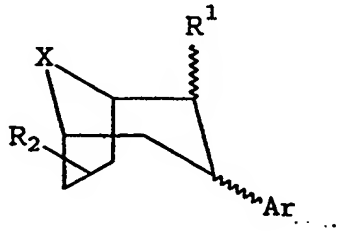
AMENDMENTS TO THE CLAIMS:

This listing of claims will replace all prior versions, and listings, of claims in the application.

1. (Currently amended) A compound having the structural formula:



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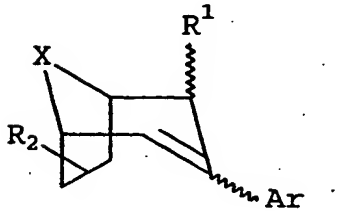
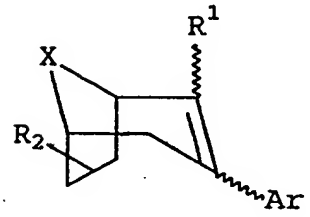


or



wherein:

R_1 = ~~$COOR_7$~~, COR_3, ~~lower alkyl, lower alkenyl, lower alkynyl, $CONHR_4$, or COR_6~~ and is α or β;

R_2 = OH or O, is a 6- or 7- substituent, and if R_2 is OH, it is α or β;

X = NR_3, [[,]] NSO_2R_3, or $C{=}CX_1Y$ with the N[[,]] being a member of the ring;

X_1 = NR_3, or NSO_2R_3;

R_3- H, $(CH_2)_nC_6H_4Y$, C_6H_4Y, $CHCH_2$, lower alkyl, lower alkenyl or lower alkynyl;

Y = H, Br, Cl, I, F, OH, OCH_3, CF_3, NO_2, NH_2, CN, $NHCOCH_3$, $N(CH_3)_2$, $(CH_2)_nCH_3$, $COCH_3$, or $C(CH_3)_3$;

~~R_4 = CH_3, CH_2CH_3, or CH_3SO_2;~~

~~R_6 = morpholinyl or piperidinyl;~~

Ar = phenyl-R_5, naphthyl-R_5, anthracenyl-R_5, phenanthrenyl-R_5, or diphenylmethoxy-R_5;

R_5 = H, Br, Cl, I, F, OH, OCH_3, CF_3, NO_2, NH_2, CN, $NHCOCH_3$, $N(CH_3)_2$, (CH_2)nCH_3, $COCH_3$, $C(CH_3)_3$ where n= 0-6, 4-F, 4-Cl, 4-I, 2-F, 2-Cl, 2-I, 3-F, 3-Cl, 3-I, 3,4-diCl, 3,4-diOH, 3,4-diOAc, 3,4-diOCH_3, 3-OH-4-Cl, 3-OH-4-F, 3-Cl-4-OH, 3-F-4-OH, lower alkyl, lower alkoxy, lower alkenyl, lower alkynyl, CO(lower alkyl), or CO(lower alkoxy); and

n = 0, 1 ,2 ,3 ,4 or 5;

~~R_7= lower alkyl; and~~

~~when X = N, R_1 is not COR_6~~.

2. (original) The compound of claim 1, which is a 1-S enantiomer.

3. (original) The compound of claim 1, wherein Ar is a 3α- group.

4. (original) The compound of claim 1, wherein Ar is a 3β- group.

5. (Currently amended) The compound of claim 1, wherein ~~R_1 is CO_2CH_3 or COR_3,~~ R_2 is OH, and X is NR_3.

6. (Currently amended) The compound of claim 1, wherein the compound has an IC_{50} SERT/DAT ratio of ~~is~~ greater than about 10, preferably greater than about 30 and more preferably 50 or more.

7. (original) The compound of claim 1, having an IC_{50} at the DAT of less than about 500 nM, preferably less than 60 nM, more preferably less than about 20, and most preferably less than about 10.

8. (Cancelled)

9. (Currently amended) The compound of claim ~~8~~1, wherein X is N, Ar is phenyl, substituted phenyl, diarylmethoxy or substituted diarylmethoxy.

10. (original) The compound of claim 9, wherein the substituent is a halogen.

11. (original) The compound of claim 9, wherein Ar is a mono- or di-halogen substituted phenyl.

12. (Currently amended) The compound of claim 1 ~~8~~, wherein the aryl ring is ~~can be~~ substituted with one or more halide atoms, hydroxy groups, nitro groups, amino groups, cyano groups, lower alkyl groups having from 1-8 carbon atoms, lower alkoxy groups having from 1-8 carbon atoms, lower alkenyl groups having from 2-8 carbon atoms, or lower alkynyl groups having from 2-8 carbon atoms.

13. (original) The compound of claim 12, wherein the aryl ring can be substituted with chloride, fluoride or iodide.

14. (Previously presented) The compound of claim 12, wherein an amino group is a mono- or di- alkyl substituted group having from 1-8 carbon atoms.

15. (original) The compound of claim 12, wherein the aryl group has a substituent selected from the group consisting of Br, Cl, I, F, OH, OCH_3, CF_3, NO_2, NH_2, CN, $NHCOCH_3$, $N(CH_3)_2$, $COCH_3$, $C(CH_3)_3$, $(CH_2)_nCH_3$ where n= 0-6, allyl, isopropyl and isobutyl.

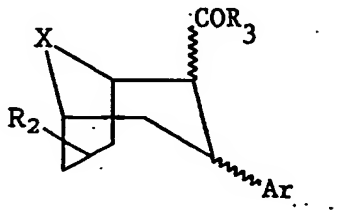
16. (Currently amended) The compound of claim 1~~8~~, wherein the aryl group has a substituent selected from the group consisting of lower alkyl, lower alkenyl and lower alkynyl.

17. (Currently amended) The compound of claim 1~~8~~, wherein the aryl group is substituted with a member selected from the group consisting of 4-F, 4-Cl, 4-I, 2-F, 2-Cl, 2-I, 3-F, 3-Cl, 3-I, 3,4-diCl, 3,4-diOH, 3,4-diOAc, 3,4-diOCH_3, 3-OH-4-Cl, 3-OH-4-F, 3-Cl-4-OH and 3-F-4-OH.

18. (original) The compound of claim 9, wherein R_2 is OH.

19. (Cancelled)

20. (Previously presented) The compound of claim 1 having the following structural formula:



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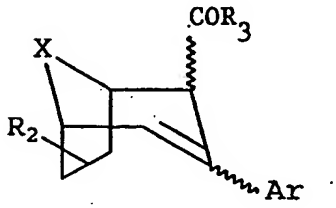

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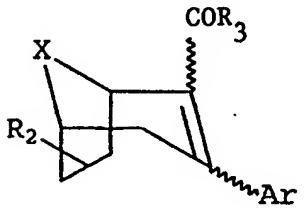


where X is NR_3, R_3 is CH_2CH_3, R_2 is OH or O in the 6- or 7- position, Ar is phenyl or naphthyl either of which can be substituted with halogen, alkenyl having 2-8 carbon atoms or alkynyl having 2-8 carbon atoms.

21. (original) The compound of claim 20, wherein Ar is substituted with 4-Cl, 4-F, 4-Br, 4-I, 3,4-Cl_2, ethenyl, propenyl, butenyl, propynyl or butynyl.

22. (original) The compound of claim 20, wherein R_2 is OH.

23. (original) The compound of claim 20 selected from the group consisting of:

a. 1-[3α-(3,4-Dichlorophenyl)-7β-hydroxy-8-methyl-8-azabicyclo[3.2.1]oct-2-yl]propan-1-one.

b. 1-[3β-(3,4-Dichlorophenyl)-7β-hydroxy-8-methyl-8-azabicyclo[3.2.1]oct-2-yl]propan-1-one.

24. (Currently amended) The compound of claim 1 selected from the group consisting of:

a. ~~2-Carbomethoxy-3-(3,4-dichlorophenyl)-6β-hydroxy-8-methyl-8-azabicyclo[3.2.1]oct-2-ene.~~

~~b. 2-Carbomethoxy-3-(2-naphthyl)-6β-hydroxy-8-methyl-8-azabicyclo[3.2.1]oct-2-ene.~~

~~c. 2-Carbomethoxy-3-(4-fluorophenyl)-6β-hydroxy-8-methyl-8-azabicyclo[3.2.1]oct-2-ene.~~

~~d. 2-Carbomethoxy-3-phenyl-6β-hydroxy-8-methyl-8-azabicyclo[3.2.1]oct-2-ene.~~

~~e. 2-Carbomethoxy-3-(3,4-dichlorophenyl)-7β-hydroxy-8-methyl-8-azabicyclo[3.2.1]oct-2-ene~~

~~f. (1S)-2-Carbomethoxy-3-(3,4-dichlorophenyl)-7β-hydroxy-8-methyl-8-azabicyclo[3.2.1]oct-2-ene.~~

~~g. (1R)-2-Carbomethoxy-3-(3,4-dichlorophenyl)-7β-hydroxy-8-methyl-8-azabicyclo[3.2.1]oct-2-ene.~~

~~h. 2-Carbomethoxy-3-(2-naphthyl)-7β-hydroxy-8-methyl-8-azabicyclo[3.2.1]oct-2-ene.~~

~~i. 2-Carbomethoxy-3-(4-fluorophenyl)-7β-hydroxy-8-methyl-8-azabicyclo[3.2.1]oct-2-ene.~~

~~j. 2-Carbomethoxy-3-phenyl-7β-hydroxy-8-methyl-8-azabicyclo[3.2.1]oct-2-ene.~~

~~k. 2β-Carbomethoxy-3β-(3,4-dichlorophenyl)-6β-hydroxy-8-methyl-8-azabicyclo[3.2.1]octane.~~

~~l. 2β-Carbomethoxy-3β-(2-naphthyl)-6β-hydroxy-8-methyl-8-azabicyclo[3.2.1]octane.~~

~~m. 2β-Carbomethoxy-3β-(4-fluorophenyl)-6β-hydroxy-8-methyl-8-azabicyclo[3.2.1]octane.~~

~~n. 2β-Carbomethoxy-3β-phenyl-6β-hydroxy-8-methyl-8-azabicyclo[3.2.1]octane.~~

~~o. 2β-Carbomethoxy-3β-(3,4-dichlorophenyl)-7β-hydroxy-8-methyl-8-azabicyclo[3.2.1]octane.~~

~~p. (1S)-2β-Carbomethoxy-3β-(3,4-dichlorophenyl)-7β-hydroxy-8-methyl-8-azabicyclo[3.2.1]octane.~~

~~q. (1R)-2β-Carbomethoxy-3β-(3,4-dichlorophenyl)-7β-hydroxy-8-methyl-8-azabicyclo[3.2.1]octane.~~

~~r. 2β-Carbomethoxy-3β-(2-naphthyl)-7β-hydroxy-8-methyl-8-azabicyclo[3.2.1]octane.~~

~~s. 2β-Carbomethoxy-3β-(4-fluorophenyl)-7β-hydroxy-8-methyl-8-azabicyclo[3.2.1]octane.~~

~~t. 2β-Carbomethoxy-3β-phenyl-7β-hydroxy-8-methyl-8-azabicyclo[3.2.1]octane.~~

~~u. 2β-Carbomethoxy-3α-(3,4-dichlorophenyl)-6β-hydroxy-8-methyl-8-azabicyclo[3.2.1]octane.~~

~~v. 2β-Carbomethoxy-3α-(2-naphthyl)-6β-hydroxy-8-methyl-8-azabicyclo[3.2.1]octane.~~

~~w. 2β-Carbomethoxy-3α-(4-fluorophenyl)-6β-hydroxy-8-methyl-8-azabicyclo[3.2.1]octane.~~

~~x. 2β-Carbomethoxy-3α-phenyl-6β-hydroxy-8-methyl-8-azabicyclo[3.2.1]octane.~~

~~y. 2β-Carbomethoxy-3α-(3,4-dichlorophenyl)-7β-hydroxy-8-methyl-8-azabicyclo[3.2.1]octane.~~

~~z. (1S)-2β-Carbomethoxy-3α-(3,4-dichlorophenyl)-7β-hydroxy-8-methyl-8-azabicyclo[3.2.1]octane.~~

~~aa. (1R)-2β-Carbomethoxy-3α-(3,4-dichlorophenyl)-7β-hydroxy-8-methyl-8-azabicyclo[3.2.1]octane.~~

~~bb. 2β-Carbomethoxy-3α-(2-naphthyl)-7β-hydroxy-8-methyl-8-azabicyclo[3.2.1]octane.~~

~~cc. 2β-Carbomethoxy-3α-(4-fluorophenyl)-7β-hydroxy-8-methyl-8-azabicyclo[3.2.1]octane.~~

~~dd. 2β-Carbomethoxy-3α-phenyl-7β-hydroxy-8-methyl-8-azabicyclo[3.2.1]octane.~~

~~ee. 2β-Carbomethoxy-3α-(3,4-dichlorophenyl)-7α-benzoyloxy-8-methyl-8-azabicyclo[3.2.1]octane.~~

~~ff. 2β-Carbomethoxy-3α-(3,4-dichlorophenyl)-6α-benzoyloxy-8-methyl-8-azabicyclo[3.2.1]octane.~~

~~gg. 2β-Carbomethoxy-3α-(3,4-dichlorophenyl)-7α-hydroxy-8-methyl-8-azabicyclo[3.2.1]octane.~~

~~hh. 2β-Carbomethoxy-3α-β,4-dichlorophenyl)-6α-hydroxy-8-methyl-8-azabicyclo[3.2.1]octane~~

~~ii. 2β-Carbomethoxy-3α-(3,4-dichlorophenyl)-8-methyl-8-azabicyclo[3.2.1]oct-7-one.~~

~~jj. 2β-Carbomethoxy-3β-(3,4-dichlorophenyl)-8-methyl-8-azabicyclo[3.2.1]oct-7-one.~~

~~kk. 2β-Carbomethoxy-3α-bis(fluorophenyl)methoxy-7β-hydroxy-8-methyl-8-azabicyclo[3.2.1]octane.~~

~~ll. 2β-Carbomethoxy-3α-bis(4-fluorophenyl)methoxy-6β-hydroxy-8-methyl-8-azabicyclo[3.2.1]octane.~~

~~mm.~~ 1-[3α-(3,4-Dichlorophenyl)-7β-hydroxy-8-methyl-8-azabicyclo[3.2.1]oct-2-yl]propan-1-one[[.]];

b~~nn~~. 1-[3β-(3,4-Dichlorophenyl)-7β-hydroxy-8-methyl-8-azabicyclo[3.2.1]oct-2-yl]propan-1-one.

25. (original) A method for inhibiting 5-hydroxytryptamine reuptake of a monoamine transporter comprising contacting the monoamine transporter with a compound of claim 1.

26. (original) The method of claim 25, wherein the monoamine transporter is selected from the group consisting of a dopamine transporter, a serotonin transporter and a norepinephrine transporter.

27. (original) A method for inhibiting 5-hydroxytryptamine reuptake of a monoamine transporter in a mammal comprising administering to the mammal a 5-hydroxytryptamine reuptake inhibiting amount of a compound of claim 1.

28. (original) A method for inhibiting dopamine reuptake of a dopamine transporter in a mammal comprising administering to the mammal a dopamine reuptake inhibiting amount of a compound of claim 1.

29. (original) A pharmaceutical composition comprising a therapeutically effective amount of the compound of claim 1 and a pharmaceutically acceptable carrier.

30. (original) A method for treating a mammal having a disorder selected from neurodegenerative disease, psychiatric dysfunction, dopamine dysfunction, cocaine abuse

and clinical dysfunction comprising administering to the mammal an effective amount of a compound of claim 1, wherein the Ar is a 3α-group.

31. (original) A method for treating a mammal having a disorder selected from neurodegenerative disease, psychiatric dysfunction, dopamine dysfunction, cocaine abuse and clinical dysfunction comprising administering to the mammal an effective amount of a compound of claim 1.

32. (cancelled)

33. (original) A method for treating a neurodegenerative disease in a mammal comprising administering to the mammal an effective amount of a compound of claim 1.

34. (original) The method of claim 33, wherein the neurodegenerative disease is selected from Parkinson's disease and Alzheimer's disease.

35. (original) A method for treating psychiatric dysfunction in a mammal comprising administering to the mammal an effective amount of a compound of claim 1.

36. (cancelled)

37. (original) The method according to claim 35, wherein the psychiatric disorder comprises depression.

38. (cancelled)

39. (original) A method for treating dopamine related dysfunction in a mammal comprising administering to the mammal a dopamine reuptake inhibiting amount of a compound of claim 1.

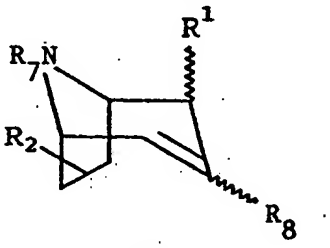
40. (original) The method according to claim 39, wherein the dopamine related dysfunction comprises Attention deficit disorder.

41. (original) A method for treating cocaine abuse in a mammal comprising administering to the mammal an effective amount of a compound of claim 1.

42. (original) A method for treating clinical dysfunction in a mammal comprising administering to the mammal an effective amount of a compound of claim 1.

43. (original) The method of claim 42, wherein the clinical dysfunction comprises migraine.

44. (Currently amended)



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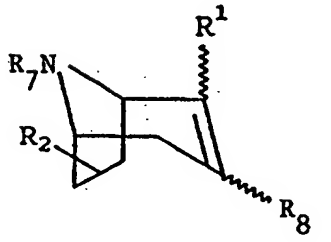


wherein:

R_1 = ~~$COOR_7$, COR_3, lower alkyl, lower alkenyl, lower alkynyl, $CONHR_4$,~~ or $CON(R_7)OR_7$ ~~or COR_6~~ and is α or β;

R_2 = OR_9 and is a 6- or 7- substituent;

R_3= H, $(CH_2)_nC_6H_4Y$, C_6H_4Y, $CHCH_2$, lower alkyl, lower alkenyl or lower alkynyl;

Y = H, Br, Cl, I, F, OH, OCH_3, CF_3, NO_2, NH_2, CN, $NHCOCH_3$, $N(CH_3)_2$, $(CH_2)_nCH_3$, $COCH_3$, or $C(CH_3)_3$;

~~R_4 = CH_3, CH_2CH_3, or CH_3SO_2;~~

~~R_6 = morpholinyl or piperidinyl;~~

R_8 = camphanyl, phenyl-R_5, naphthyl-R_5, anthracenyl-R_5, phenanthrenyl-R_5, or diphenylmethoxy-R_5;

R_5 = H, Br, Cl, I, F, OH, OCH_3, CF_3, NO_2, NH_2, CN, $NHCOCH_3$, $N(CH_3)_2$, $(CH_2)nCH_3$, $COCH_3$, $C(CH_3)_3$ where n= 0-6, 4-F, 4-Cl, 4-I, 2-F, 2-Cl, 2-I, 3-F, 3-Cl, 3-I, 3,4-diCl, 3,4-diOH, 3,4-diOAc, 3,4-diOCH_3, 3-OH-4-Cl, 3-OH-4-F, 3-Cl-4-OH, 3-F-4-OH, lower alkyl, lower alkoxy, lower alkenyl, lower alkynyl, CO(lower alkyl), or CO(lower alkoxy);

n = 0, 1, 2, 3, 4 or 5;

R_7= lower alkyl; and

R_9 = a protecting group.

45. (Currently amended) The compound of claim 44 selected from the group consisting of:

a) 2β-Carbo-N-methoxy-N-methylamino-3α-(3,4-dichlorophenyl)-7β-methoxymethoxy-8-methyl-8-azabicyclo[3.2.1]octane;

b) 2β-Carbo-N-methoxy-N-methylamine-3β-(3,4-dichlorophenyl)-7β-methoxymethoxy-8-methyl-8-azabicyclo[3.2.1]octane;

c) 1-[3α-(3,4-Dichlorophenyl)-7β-methoxymethoxy-8-methyl-8-azabicyclo[3.2.1]oct-2-yl]propan-1-one;

d) 1-[3β-(3,4-Dichlorophenyl)-7β-methoxymethoxy-8-methyl-8-azabicyclo[3.2.1]oct-2-yl]propan-1-one;

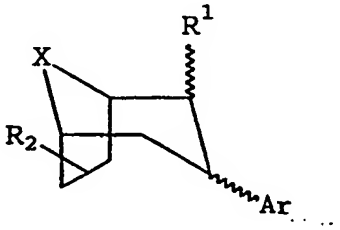
~~e) (1R)-2-Carbomethoxy-3-(1'S)-camphanyl-7β-rnethoxymethoxy-8-methyl-8-azabicyclo[3.2.l]oct-2-ene;~~

~~f) (1R)-7β-methoxymethoxy-2-methoxycarbonyl-8-methyl-3-oxo-8-azabicyclo[3.2.1]octane;~~

~~g) (1S)-2-Carbomethoxy-3-(3,4-dichlorophenyl)-7β-(1'S)-camphanyloxy-8-methyl-8-azabicyclo[3.2.1]oct-2-ene; and~~

~~h) (1R) 2-Carbomethoxy 3-(3,4-dichlorophenyl) 7β-camphanoyl 8-methyl 8-azabicyclo[3.2.1]oct-2-ene~~.

46. (New) A compound having the structural formula:



wherein:

R_1 = $COOR_7$, COR_3, lower alkyl, lower alkenyl, lower alkynyl, $CONHR_4$, or COR_6 and is α or β;

R_2 = O and is a 6- or 7- substituent;

X = NR_3, with the N being a member of the ring;

R_3 = H, $(CH_2)_nC_6H_4Y$, C_6H_4Y, $CHCH_2$, lower alkyl, lower alkenyl or lower alkynyl;

Y = H, Br, Cl, I, F, OH, OCH_3, CF_3, NO_2, NH_2, CN, $NHCOCH_3$, $N(CH_3)_2$, $(CH_2)_nCH_3$, $COCH_3$, or $C(CH_3)_3$;

R_4 = CH_3, CH_2CH_3, or CH_3SO_2;

R_6 = morpholinyl or piperidinyl;

Ar = phenyl-R_5, naphthyl-R_5, anthracenyl-R_5, phenanthrenyl-R_5, or diphenylmethoxy-R_5;

R_5 = H, Br, Cl, I, F, OH, OCH_3, CF_3, NO_2, NH_2, CN, $NHCOCH_3$, $N(CH_3)_2$, $(CH_2)nCH_3$, $COCH_3$, $C(CH_3)_3$ where n= 0-6, 4-F, 4-Cl, 4-I, 2-F, 2-Cl, 2-I, 3-F, 3-Cl, 3-I, 3,4-diCl, 3,4-diOH, 3,4-diOAc, 3,4-diOCH_3, 3-OH-4-Cl, 3-OH-4-F, 3-Cl-4-OH, 3-F-4-OH, lower alkyl, lower alkoxy, lower alkenyl, lower alkynyl, CO(lower alkyl), or CO(lower alkoxy);

n = 0, 1 ,2 ,3 ,4 or 5; and

R_7= lower alkyl.

47. (New) The compound of claim 46, which is a 1-S enantiomer.

48. (New) The compound of claim 46, wherein Ar is a 3α- group.

49. (New) The compound of claim 46, wherein Ar is a 3β- group.